

Installation and Usage Instructions

Form Wash

Desktop Stereolithography Print Cleaner



7.	Troubleshooting and Repair	3	0
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Read and understand this manual and its safety instructions before using the Form Wash. Failure to do so can result in serious injury or death.

DISCLAIMER

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TRADEMARKS

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DOCUMENT REVISIONS

Date	Version	Document Changes
Oc. 2015	REV 00	t,Lia∟bicaLit, fQic Suanz Gideatd Safe⊾ a he⊾
N 2019	REV 01	t Lia ∟ bicali t

1. Preface

Cigna ali i i rchaig he Fr Wah. O behaffhe e ee horeale a d La REFrabilech g, elha Lifr Linchoa e. The i versi i i de i ride i frai i frieder i la ciderla d

1.2.2 Returns

Fr ab acce - re-rt frei e ed. i ed. a el i da aged rud ce i hi 30 da fehe hi e dae. Re-rt i e beach ried b Fr ab. Vii Fr ab. c fr re de aied i fr ai i ab e re-rt i g i ri rcha e.

1.2.3 Warranty

Thi rid ci recedider ara .Fr ab for a ara fra Fr ab -braided hard are. U e where i e e reward, whe Ter f Serice, ic digwhe Wara ., ci where he wire agree e where equilable difference is a difference of the serice and a rid ci wire the firme for the series of the series of the series of ci wire ci wire and the series of the series of the series of the series of a rid ci wire the series of the series of the series of the series of ci wire ci wire the series of t

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2.2 Product Elements

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Platform Mount H d _he

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a _ _ he a f -

Basket Re abec _ a e-

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b id a f -

Basket Mount A igeh

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2.3 Technical Data

Shipping Weight	9.0 g (20 b)		
Product Weight	6.7 g (14.5 b)		
Shipping Dimensions	33.0 35.4 45.6 c (14 14 18 j)		
Product Dimensions	26.2 29.3 34.0 c (10.3 11.5 13.4 () Heigh he e : 64 c (25.2 ()		
Minimum Space Requirement	38.9 41.9 64.0 c (15.3 16.5 25.4 ()		
Power Requirements	100 240 V 2.0 A 50/60 H 50 W		
Electrical Safety Standard	60950-1:2005+A1:2009+A2:2013 (عرط a icab e زمانز a de iaانز)		
Sound Emission	D e 🚬 e ceed 70 dB(A).		
Bucket Volume	8.6 L		
Maximum Part Size	14.5 14.5 17.5 c (5.7 5.7 6.9 L)		
Operating Temperature	LS gge _ed 18 28 C (64 82 F)		
Agitation Method	Mag elica q_ edi e er		

2.4 Form Wash Controls

Form Wash Controls
Whe cilleced_ er enhe ib_ right and endenhe Fir Waih:
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Pre she i bo ecca si i she di a.
Thef ig si are allabetion she all quishes the angle is the first waih dia a:
Start: L er she uis a dia endiulate she a hig rice.
Open: Raie she uis a dia e.
Sleep: L er she uis a dia e.
Sleep: L er she uis a dia estimate and control e second and she ecced.
Time: Pre she i bo eccad ad second ad second actions and a she ecced.
Aterbegiiiga a hore, she dia hore af right e a dadduita endius a signification of the addition of the addition of the edit of the reatig_iet_heahcce. End: Caçce_here attg_iet_he ahcce hiea _ tg_heagLauitatd ittg_he afr atdba e_ t_

3.1.3 Resin

Re ec. Frabrei, i e a, h. ehd che ica. F. …a, dard che ica afe. r ced re a, d Frabrei, ha, digi, ur cii, .



Wear gloves whenever handling liquid resin or solvents. If swallowed, immediately call a poison center or medical professional.

ţgeţena, Frabreţiţ_a redfnze Lhfd, drţ, redica a icaliţ _henla abd.Heer, bic albereţ,∟cha Deţ_aSG, are bi gica afefr ecic_e adeiguh fe ∟re₂_henla abd.Refer_ţfraliţab_each ecicreţfr rede_ai.



Never ingest resin in liquid or solid form.



Always consult the SDS (Safety Data Sheet) as the primary source of information to understand safety and handling of Formlabs materials. Combinations of resin and solvent should be handled according to the restrictions of both. For questions, consult the appropriate SDS(s).

3.1.4 Radio Interference

Thie_i e_ha bee_e_ed a di_id_c ih-he i i fra Ca B digia de ice, _ _ a == CFR Tie 47, Pac 15 fFCC (Be . The e i i are de ig ed_ ride rea (abe reci) agai _ haruf (efere ce he _ he e_ i e_ i eraed) a c ecia e iri e _ Thie_i e_ge erae _ e, a d ca radiae radi fra_e c e erg a d, if _ i _ a ed a d_ ed (acc rda ce ih _ he i i e_ i a, a qa e haruf (efere ce _ radi c _ _ icai) . O erai i fini e_ i e_ i are ide _ ia area i i e_ qa e haruf (efere ce i hich ca e he er i be ra_ i ed a da e haruf (efere ce _ radi c _ _ icai) . O erai i fini e_ i e_ i are ide _ ia area i i e_ qa e haruf (efere ce i hich ca e he er i be ra_ i ed c c rec _ he i efere ce a _ heir (e e e. Chage r di cai i = _ hi rid c i _ a h ried b F r ab q_ d id _ he e ec r ag e icc _ aibii (EMC) a di ega e _ ria _ h rie _ erae _ he rid c.



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

3.1.5 Solvents



Formlabs does not manufacture solvents. Always consult the safety data sheet (SDS) from your solvent supplier as the primary source of information for storage and handling.

Cilh carrogatialitaregalit, hich a hae ecicre_ire et_fr: _rage, et_lalit, er tarruecule e_i et_,atdi a f et_.







Calibrate the Hydrometer (IPA Only) 4.3.4 If _ hae ed _ rFr Wah ih IPA (ra _ her e _ ih a e_i a e_eci c gra L), caibra.e_he i c ded h dr e.e.r. O ce ca ibraed, he h dr e erca be ed de er je he _he e _ h_ d be cha ged. To calibrate the hydrometer: 1. H d_he ha de 🗛 a dre ea e_he_ (_he a hıb.ce_' fre hIPA. 2. Side_he Ori g ${}^{l\!\!\!0}$ a ; g_heribbed _e _ ; i he Ori g aig _ ih_he h \sim ; g ${}^{l\!\!\!0}$ a_he_ f_he a. 3. Lea e_he Origi_hi Lii. The aig e_f_he ig aid Origi_ ed_ chec_here i cice_rai; fIPA be ee a he . 4. Se reche h dr eleri che - rage area ache bac f_he_ (L. The Fr Wahiread fr e ce_he ahbce_ha bee ed be equile it and a it is a duhe hor everica ibraued. Che heuheru a huhe az i _heubid a_fr- r-i__heba e_. Transporting the Form Wash 4.4 Refere 2.2 Technical Specifications frrrd ce eighead ddi eg i g fruerat rualit ruhi tg.

The Form Wash complete packaging kit consists of:

 $1 _ ercardb ard care$ $1 fa b _ i erc$ $1 fa _ erci erc$, hich h d _he a acce r b e $1 r _ ecci e a _ ic bag$ Pa _ ic ra

Original packaging may be required for warranty service. Do not ship with solvent inside the bucket. Solvent left inside the Form Wash can damage the unit in transit, which may lead to additional fees or void the warranty.

To prepare to transport the Form Wash:

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9. Rea e be_heb.

10. Pace_heb_ fa i ezi__heb.

11. Pace_heFr Wahi_ f_heb_ fa i ez.

12. Pace_he_ erfa i ezi_ f_heFr Wah.

13. Sea_heb ih_a e.
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When shipping a machine to Formlabs for service, do not ship the accessory tools or the power supply. Accessories will not be returned after service. The product's original packaging is required for warranty service. Contact other authorized resellers for unique guidance on shipping requirements.

5.2.4 Collect Prints

Re e_heib id a fr r az fr ba e, de e dig i_he a h e h d ed i 5.2.1Insert Print.

5.2.5 Finish Your Print

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O, ce each a⊭ i a hed a d dried, chec _he ecic a eria' _tc rig e ig i ∟ c=fr ab.c .P _tc rigi _i ia fr Sai dard Rei a dre_ ired fr a _her aeria _ achie e _heir _i a r e =ie.

Ater torig (if jece ar), ether houser that c either Fit in Kie caref is the carefield the arc(). Is recar a bere ed before torig, be are a arriter or relight a dhear the torig of the construction of the con



Wear safety glasses to protect eyes from dislodged fragments of supports.

Y_cajajd_ rear ajd ih _rarefra _hjih.

5.3 Considerations for Specific Geometries

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5.3.1 Hollow Geometries

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5.3.2 Internal Channels

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5.3.3 Large Parts

Para e ar_id_he ba e ih_he circ aii fach i he a hib ce. Chec he ah f_he ba e a dii e id_ e reha a ara ca afe raie _ f_heib ce he he a h c ce c e a d_he ba e raie . Para ha ha g__ ide_he ba e eri e er a di dge_he i e rid he _ he a h c ce c e.e.

Whe_her_ ig_herbid a_fr rba e_a a a h e_h d,_he a i∟ ige a∞ ie _ha_ca be a hedi_he Fr Wa hi 14.5 14.5 17.5 c (5.7 5.7 6.9 i).

5.3.4 Concave Surfaces, Printed and Washed on the Build Platform

H ed az __ cha h ed de_a de ried direc ;_heubid afr ca _a rei i ideud rig_he a h c ce, he _he are a hed _i a_ached_ _ heubid afr . Ci ider a hig_he e az i _he Fr Wa h ba e raddiga ecid a h c ceaferre ig_he fr _heubid afr _ re eiuc red rei _haii _ -re ed he a hig i_heubid afr a ie.

- T cheche-che et Liabefreeqigaz: 1. Ue-hei b-ec-**Sleep**-er-he Li-adce-heidf-heFr Wah.
- 2. O e _he _er id.
- 3. Failhe reil caibraled h dr elerit he a hob cell. Nile-heaigt et filhe Originealie i he a' itg.

Whe calbraded rer, _he Origh dbe esalig ihshe hre ig i freh es. A she est rei cice rai i creae, she eigh i a higher a dshe se a dOrigirte. Fra sh, dru face i h, reace eshe he she Origrie ab eshe a' sa ig.

5.4.3 Powering Off the Form Wash

Ur f_heFr Wahc eve he ig rerighede icea de ciere er Tur f_heFr Wahc eve, dicijecthe ercroffr the ercroe. Eureelherthe auer ert i ea i acce ibe. TheFr Wahdi a ivat alca er fatera erid fiactit.

5.4.4 Updating the Firmware

The Fr Wahic de aOGC.43 r

5.4.4 Upd5ting the Firmware

6. Maintenance

Formlabs provides instructions to advise skilled and non-skilled persons in installing, operating, and maintaining the Form Wash. The Form Wash shall only be maintained by a qualified and trained person.

- Do not open the Form Wash and/or investigate internal components unless under the guidance of Formlabs or an authorized reseller. Contact Formlabs or an authorized reseller for any additional guidance.
- Unauthorized disassembly or repair procedures may damage the Form Wash and void the warranty.
- Wear personal protective equipment when performing maintenance tasks. Use tools only as described.
- Disconnect the power cable before maintenance.

I r ach (IPA) i Liabe cea ____face, i c digue redad cur redre i. Whe i i g_he__er_ face f_he F r Wah_ ea; i abra i e c _h. O_her a eria a crach_he i. F r ab rud c erf r be he he are e - ai ai edad r er caredf r.A re ac are ceated i he F r Wah, he e grad a bec e recipe raed ih i id

6.2 Inspection Tasks Between Wash Cycles

6.2.1 Maintaining Solvent Volume

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To decrease the rate of solvent evaporation, especially for volatile solvents, lower the basket and keep the outer lid closed when the Form Wash is not in use.

6.2.2 Inspecting Parts Before Washing

t eca az alerrizigz deertezhe bez a hig roe. Ver a az a a "hr_gh-he a h ba eza di ede-hei e erlargerriz a tizzt-he Fr Wa hi cezat rietzait r a qa ezhe Fr Wa hz er . See 5.3 Considerations for Specific Geometries fratzheri frazit.

6.3 Monthly Inspection and Maintenance Tasks

6.3.1 Measuring Resin Concentration

Mea_re_here i cice and i f_he e i aregarbai i gacaibra_edh dr e.e. If _ are i gIPA a _ r a h e (rai _ her e i hat e i a e e cicgrai), _ e_hehdr e_eric ded ih_heFr Wah.Fri _ cii i h _ caibra_ea d e a hdr e_er; ee 5.4.2 Measuring the Resin Concentration of Solvent.

Y_ ca a gage_he e e fre i cice - ali i he e _ b he_her rie az are uf cea afer a hig.Ci_a i a ed e _ i i _ be a electie a fre h e _ b _ i i _ da age az a d ca _ i be ed a az fa _ _ i _ e a hig r ce .Fr re i fr ali, ee 5.4.1 Extending Solvent Lifetime.

6.4 Periodic Inspection and Maintenance Tasks

6.4.1 Cleaning the Wash Bucket

6.5.1 **Updating the Form Wash Firmware**

Fr ab reg ar reea et daed r are to g a di r eficii at . Re ie the PreFr a d r are reea et e e ear re ab et i r e e that c e the each erit 'reea e.
To update the firmware:

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L cae a driche Fr Wa h/C re U daer to the PreFr to a at f der chec fr r are dae a det daether are.
Whethe daer deet the time et the et t

4. The adahete rarea dreas the time clear date. The date have a rial of the class of the date of the d

Do not disconnect the USB or power cables during the update.

- 5. Firmware Up To Date a ear (e... _ he citected this he all dater id . Seec. Done (celhe date i c e.e.
- 6. Reea. Le 15-L dale r are (addii (a Fr Wab. (i.
- 7. Seec. Quit_ c e_he_ da.er.

6.5.2 Replacing Solvent

Ue_hef (g_ ie_reace_he e<_i_heFr Wah: Sih (_ , (c ded Lh_heFr Wah E _ c (_a) en_ Labefr = rig_ = 8.6 L f e<_ 8.6 L fireh e<_

F where we want for events where the for Wahi was a check in a check with the formula of the formula of the check of the

1. Remove the wash bucket and inner lid

Saz in the terrid et and a free terrid, a dune ba enre ed. Lifuthe a hub c enformand a du and a re e infre une ba e. Seuthe a hub c en tra c eat, uab eu rface, and the re eucle to errid.

2. Use the siphon pump to remove solvent from the wash bucket

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The ihi is a grade and for ind be experience. For if a ,
e e a sub- is created end of the end of th
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Watch the siphon pump after initiating flow. The flow will continue automatically as long as the source container's fill level remains elevated above the receiving container.

7. **Troubleshooting and Repair**

Frequencies of the state of th

7.1 Restarting with a Power Cycle

If the dima free end right ration the rest of the res 1. Ut L g_he_ti.

- 2. Waisa ea 210 ector et reac e ercce. 3. Rectienshe ercabes resachetti.

7.2 Troubleshooting

Lahe ca e faç err r rabi r a acui Li Lhahe Fr Wah, refere ceahe fig err r, qa e, a d r ed Laij. C eae ahe i Lia ar beh aig ae a d caref duc e a rea . Ci aca Fr ab r a la ah ried re e er fr adduita a i a ce.

ERROR	CAUSE	SOLUTION
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Ц _{с –} аі іе	Miaiged i e e Debri burci; che ahubce	Chec f reicred auenia rdebri (_heb _ f _he a hub c e. Chec _ha_hei e err_aue rer.lf; _, c (_ac

7.3 Disassembly and Repair

All steps that involve opening the Form Wash and/or investigating internal components should be done by skilled persons under the guidance of Formlabs or a certified service provider.

8. Disposal

8.1 Guidance for Recycling and Disposal

8.1.1 Disposal of electronic components

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8.1.2 **D**isposal of packaging waste

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The acagigi ade foardbard ad a Lic-baed aderia. Di e facagig Lhn_ghur ca aderec cig facilie. B di ig f_he acagig adeidhe reraileru he a id ibehaard fraheediri edadu bicheadh.

8.1.3 Disposal of solvent and resin

Do not pour liquid or partially cured resin into drains or dispose of it with household waste. Do not pour solvent that contains dissolved resin into drains or dispose of it with household waste.

Cille he afe data her (SDS) fr the eight ier a the ritar Lince fiftralit.

10. Glossary

TERM	MEANING
Ba e_	H d an⊲ _ a h ih,heb_id a.fr
Baeuri	Aigeh ecre_hebae_raiea, der
Di a	The dia h _a₂ ,_ie,_e ena₂ ne,atd _it fr⊂tug ntg _he Fr Wah.
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M _herb ard	The Lerbardi Le ai cincil-Lerbar gh hich a Le i Le Fr Wah c Licale.
Q _er id	Li i e e a mai .Kee he id c ed he . e.
Pauf r L L	H d_hen_bid a⊾fr het a hig an⊴ t_he a⊾fr.
P en_	Pr ide er he Fr Wah. Seci cali : 24 V, 2 A
Si h L	The Fr Wahi (c. de a at a ihi (c. k. ed. ara, fer et. be eet_he ahb ce at da et. arage citater
Se,	N=(c_ded.Di e i_id re (fr r(_ed are '_ rface .
T _ rage	The Fr Wahic de arage cabie _ each ide f_he Lireac a hig acce rie.
USB 🛋	The Fr Wah cat citte c_a a c ∟ _eria USB. The r≤i citte cedhe _herb and a dicat be accelled fr _he bac f _he achte.
Wahubce <u>-</u>	Are abec;_a;er;_heFr Wahhdaai∟ f8.6Lf e;Ar_aùgi eora_heb_ cinca_e_he e;
Z= er = r	The Fr Wah Zzerzrae braie ad erzhe afr Lizad ba ez Liz